

Notice of Allowability

Application No.

10/693,018

Examiner

PHAN T.H. PALMER

Applicant(s)

WANG ET AL.

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/24/2003.
2. ☒ The allowed claim(s) is/are 65-76.
3. ☒ The drawings filed on 24 October 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


PHAN T. H. PALMER
PRIMARY EXAMINER

EXAMINER'S AMENDMENT *Amdt/prHP*

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

a) The Title "Optical fiber communications system using index-guiding microstructured optical fibers" changed to:

--An index-guiding microstructured optical fibers--✓

b) The NEW ABSTRACT as following:

ABSTRACT ✓

An index-guiding microstructured optical fiber, having a majority of the cross-section of the core and cladding regions occupied by voids. The voids are dimensioned such that an effective index of refraction of the cladding region is less than an effective index of the core region, the optical fiber propagating light by an index-guiding effect. The attenuation and dispersion characteristics of the microstructured optical fiber, when expressed in dB/km and ps/(nm-km), respectively, each decrease in approximate proportion to the percentage of cross-sectional area occupied by the voids. An appropriate void-to-cross-sectional area ratio may be selected so as to provide an optical communications link that provides substantially increased data throughput using today's installed base of

conduit and communications relay stations. The system hardware requirements are substantially decreased in terms of regenerator spacing, optical amplifier spacing, dispersion-compensating fiber lengths, optical filtering device precisions, and/or optical source device precisions, thereby decreasing the costs of system construction and maintenance and improving system reliability.

REASON FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance: the claims are allowable over prior art of record, because none of the references in alone or in combination discloses:

+++ An optical fiber comprising a core region having a first effective index of refraction and a cladding region having a second effective index of refraction less than said first effective index of refraction, wherein a majority of a collective cross-section of said core and cladding regions is occupied by voids, as discloses in claim 65.

+++ An optical fiber comprising a core region having a first effective index of refraction and a cladding region having a second effective index of refraction less than said first effective index of refraction, wherein at least 90% of a collective cross-section of said core and cladding regions is occupied by voids, whereby said optical fiber has an attenuation of less than 0.04 db/km and a dispersion magnitude of less than 2 ps/(nm-km) between 1450 nm and 1600 nm,

and whereby said optical fiber has an attenuation of less than 0.07 db/km and a dispersion magnitude of less than 2 ps/(nm-km) between 1100 nm and 1300 nm, as discloses in claim 75.

The underline limitation is critically, since using this fiber in the communication system, neither optical amplifiers nor dispersion-compensating fiber are required. Also, the increased range of usable wavelengths allows for wider WDM channel spacing and the use of lower precision, lower cost optical filters and optical sources, thereby lowering system costs and increasing system reliability. The splicing operations have substantially relaxed tolerances as compared to photonic bandgap (PBG) fibers.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

CONTACT INFORMATION

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHAN T.H. PALMER whose telephone number is (571) 272-2354. The examiner can normally be reached on 4/4 OFF MONDAY.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RODNEY B. BOVERNICK can be reached on (571) 272-

Art Unit: 2874

2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PTHP
09/17/04

Phan T. H. Palmer

**PHAN T. H. PALMER
PRIMARY EXAMINER**